

" An invention described ~~in claim 2~~ herein is a vacuum pump ~~according to claim 1, which is characterised in that~~ wherein the air duct is provided along the axial direction corresponding to a heat generating member including the motor as the driving source of rotation, rotational force transmission parts such as a rotating speed up gear for transmission of a driving force from the motor to the rotor, a timing gear and the like, a roller bearing supporting rotatably a shaft of the rotor, and rotors engaging with each other, and heat generated from the heat generating member flows conventionally with cooling air flowing through the air duct by the air supplying means for heat exchange.

An invention described ~~in claim 3~~ herein is a vacuum pump ~~according to claim 1 or 2, which is characterised in that~~ wherein the air supplying means is a ventilation fan or a suction fan.

An invention described ~~in claim 4~~ herein is a vacuum pump ~~according to claim 1, 2 or 3, which is characterised in that~~ wherein the casing for receiving the rotors, a rotating speed up gear section for receiving the rotating speed up gear as the rotational force transmission parts, and a timing gear section for receiving the timing gear assembly the air duct cooperatively by being connected through a connecting member

between the inner tube and the outer tube of the duplex tube structure.

An invention described ~~in claim 5~~ herein is a vacuum pump according to ~~claim 1, 2, 3 or 4, which is characterized in that~~ wherein the rotating speed up gear section and the timing gear section are constructed into upper/lower two sections separated by a partition wall, and the two sections are communicated through a duct with each other so as to be capable of circulating lubrication oil by convection.

An invention described ~~in claim 6~~ herein is a vacuum pump according to ~~claim 1, 2, 3, 4 or 5, which is characterized in that~~ wherein the rotor is mounted on a rotor shaft, one end of which is rotatably supported by a first roller bearing placed at the timing gear section fixed on one side of the casing.

An invention described ~~in claim 7~~ herein is a vacuum pump according to ~~claim 1, 2, 3, 4, 5 or 6, which is characterized in that~~ wherein the rotor is mounted on the rotor shaft so as to approach to an other side of the casing, which is provided with the inlet and sealed, and the other end of the rotor shaft is supported rotatably by a second roller bearing placed at a support cylinder with a small diameter, which is fixed on the one side of the casing.

An invention described ~~in claim 8~~ herein is a vacuum pump according to ~~claim 1, 2, 3, 4, 5, 6 or 7, which is characterized~~

~~in that~~ wherein an outer wall of at least one of the casing, the motor and the air supplying means is covered with a sound absorbing material in accordance with requirement."

On page 7, replace the paragraph starting from line 16 to line 25 with the following paragraph:

"The two rotors are formed at outer wall thereof with respective screws having ~~deferent~~ different helix direction from each other. For example, if one rotor 2A is a right hand screw, the other rotor 2B is a left hand screw. The screws with ~~deferent~~ different helix directions of the rotors 2A, 2B are formed with a large pitch 6a and a pitch 6b smaller than the large pitch 6a from an inlet side toward an outlet side of the vacuum pump. Sucked gas is compressed by the pitches 6a, 6b."

Page 10, replace the paragraph from line 14 to line 26 with the following paragraph:

"The embodiment 1 of the present invention is structured as mentioned above. When the motor M drives, the rotor shafts 11A, 11B rotate by receiving a rotating force from the motor M through the rotational force transmission parts 10 of the rotating speed up gear 8 and timing gears 9A, 9B engaged with each other. The rotors 2A, 2B, which have the screws having ~~deferent~~ different helix directions are provided on the outer

walls thereof, mounted on the rotor shafts 11A, 11B are rotated in deferent rotating directions from each other in the inner tubes 4, 4 provided in the casing 1 so as to engage the large pitch 6a and the small pitch 6b. When the motor M drives, a fan motor drives simultaneously so that the air supply fan 3 as the sir supplying means is rotated."